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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/973,685	10/09/2001	Constantin C. Stancu	GP-300969	5761

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CHRISTOPHER DEVRIES
General Motors Corporation
Legal Staff, Mail Code 482-C23-B21
P.O. Box 300
Detroit, MI 48265-3000

EXAMINER

SCHEUERMANN, DAVID W

ART UNIT	PAPER NUMBER
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2834

DATE MAILED: 10/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/973,685

Applicant(s)

STANCU ET AL.

Examiner

David W. Scheuermann

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6, 8-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6 and 8-12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 May 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____

DETAILED ACTION

Drawings

The drawing correction filed on May 22, 2003 is approved and has been entered. Additionally, the request for correction in figures 4 and 5 is withdrawn in that A_{rms} is representative of Amps root mean square rather than a misspelling of "Amps".

Response to Amendment

Applicant's arguments filed May 22, 2003 have been fully considered but they are not persuasive. Although the specification is clear on how i_q^* and i_d^* vary in response to the angle β , it is not clear how the angle β is varied after the initial assigned value of zero has been set. The application may be fatally flawed for failure to provide an adequate written description, the rejection under 35 USC § 112 is therefore maintained.

Applicant's arguments with respect to claims 1, 6, and 10 have been considered but are moot in view of the new ground(s) of rejection. The prior shows that controlling either the q-axis or d-axis current as a function of the angle between the q-axis and total stator current is known in the art.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-4, 6, and 8-12 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. It is not clear how angle β is varied and determined after the initial assigned value of zero has been set. There is not an adequate written description describing how the angle β is varied. No graphs, equations, or written description can be found which describe how or when or why the angle β is varied. While it remains clear the angle β is not constant, it is equally unclear as to any value it has other than zero. Clearly the angle β must vary over time. The methodology of how the angle β is varied is absent from the specification.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 4, 6, and 8 -12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iijima et al., US 5936378 in view of Obara et al., US 5920161.

Iijima et al. show an electric motor control system comprising a stator having current carrying coils 1U, 1V and 1W, having a surface mounted permanent rotor (column 1 lines 47-52), power electronics 10, with q-axis and d-axis current component control (see figure 18, block 113 and 120). Iijima et al. do not expressly disclose a control block to control either the d-axis or q-axis current as a function of either the angle β or the angle of the stator current vector with reference to the q-axis. Obara et al. show control block 304 which controls both the d-axis and q-axis current as a function current as a function of either the angle β or the angle of the stator current vector with reference to the q-axis, (as clearly shown in figure 3), for the purpose of providing a driving system which can compensate for variations of output power caused by the change in temperature of the magnets. Note Obara et al., column 1, lines 61-63 and column 2, lines 35-38. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use the current drive system of Obara et al. in the current command production unit 50 of Iijima et al. One of ordinary skill in the art would have been motivated to do this to compensate for variations of output power caused by the change in temperature of the magnets.

Re claim 4, note inverter with 10. Re the vector controller of claim 10, note figures 13, 22A, 22B and 22C in addition to column 17, lines 25-50. As to claim 9, official notice is taken that vector control drives are well known for their ability to control

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position, speed and torque in servo-systems. Re claim 11 note respective position sensor 3 and current sensor 2U.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Iijima et al. and Obara et al. in view of Carpenter et al., US 4642502. The combination of Iijima et al. and Obara et al. disclose the invention substantially as claimed as set forth above with respect to claim 1. The combination of Iijima et al. and Obara et al. do not expressly disclose the permanent magnets comprising a rare earth element. In the field of brushless permanent magnet rotor motors, Carpenter et al. teach using rare earth permanent magnets, for the purpose of providing stronger permanent material, see column 3, lines 58-63. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use rare earth magnets in the motor of the combination of Iijima et al. and Obara et al. One of ordinary skill in the art would have been motivated to do this for any of providing stronger magnets to generate greater torque, saturating the iron core with a wider air gap, and making a lighter rotor to enable faster acceleration.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nozari shows a phasor representing stator current in a stationary reference plane in figure 2.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David W. Scheuermann whose telephone number is (703) 308-9637. The examiner can normally be reached on Monday through Friday from 8:00 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

dws
September 24, 2003

